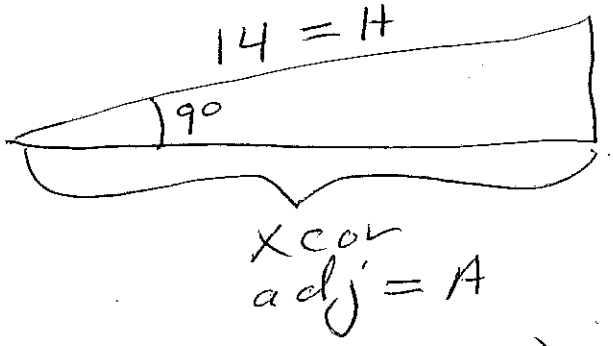
fd 14
cro 40 turtles
Where is turtle with WHO #9?

$\frac{360}{40} = \frac{36}{4} = 9°$ per turtle, per slice.

① The heading of turtle with WHO#9
is $9 \times 9 = (81°)$ is the heading.

② What is the xcor?



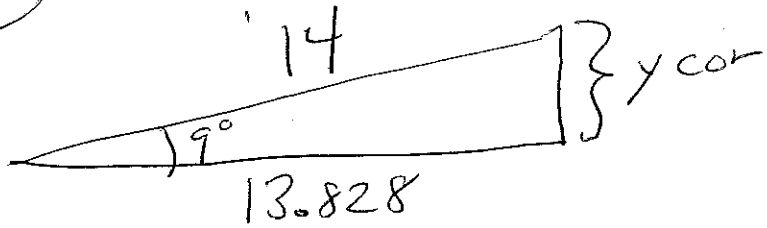
CAH $\cos(9°) = \frac{Adj}{Hyp} = \frac{xcor}{14}$

$\cos(9°) = \frac{xcor}{14}$

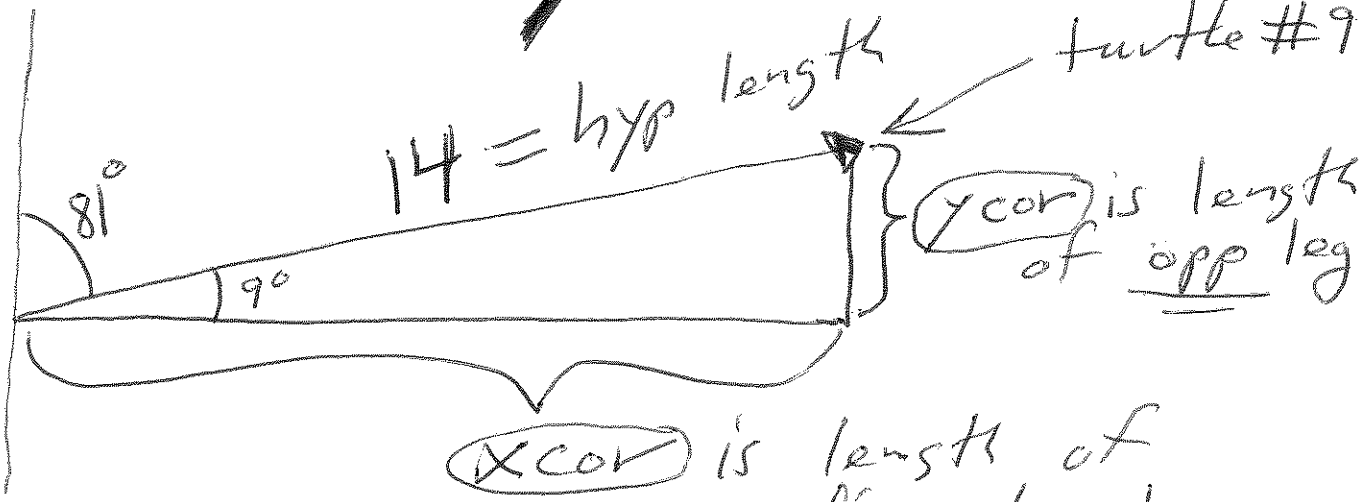
$\cos(9°)(14) = xcor$

$(0.9877)(14) = xcor$

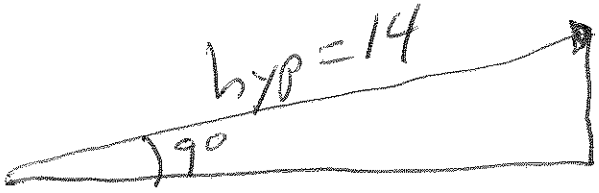
$(13.828) = xcor$



(3) What is the ~~x~~ycor?



$$\text{SOH}\quad \sin = \frac{\text{opposite}}{\text{hypotenuse}} = \frac{\text{opp}}{\text{hyp}} = \frac{O}{H}$$



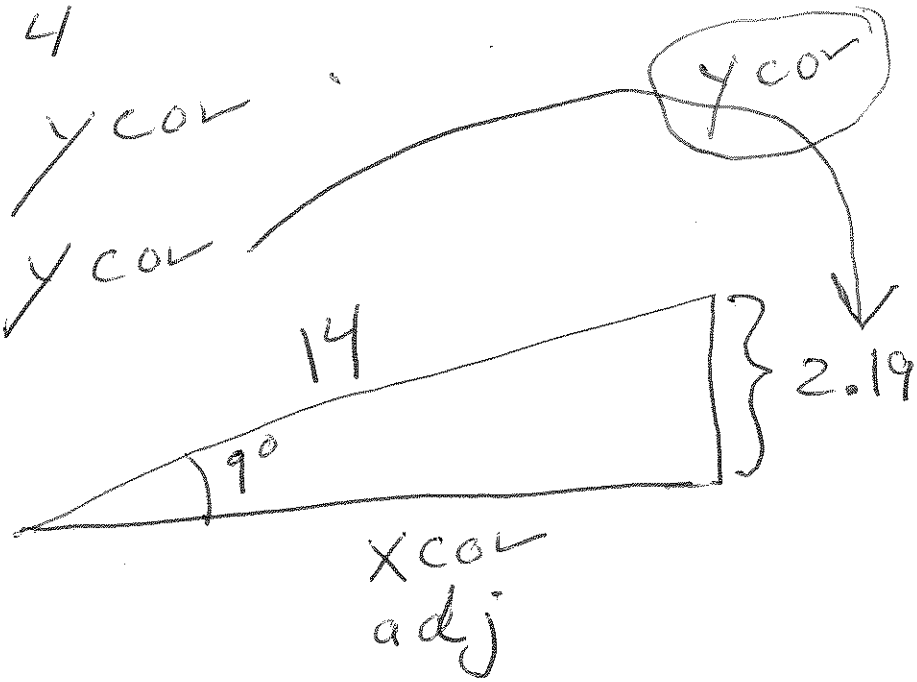
$$\sin(9°) = \frac{\text{opp}}{14}$$

$$0.1564 = \frac{\text{opp}}{14}$$

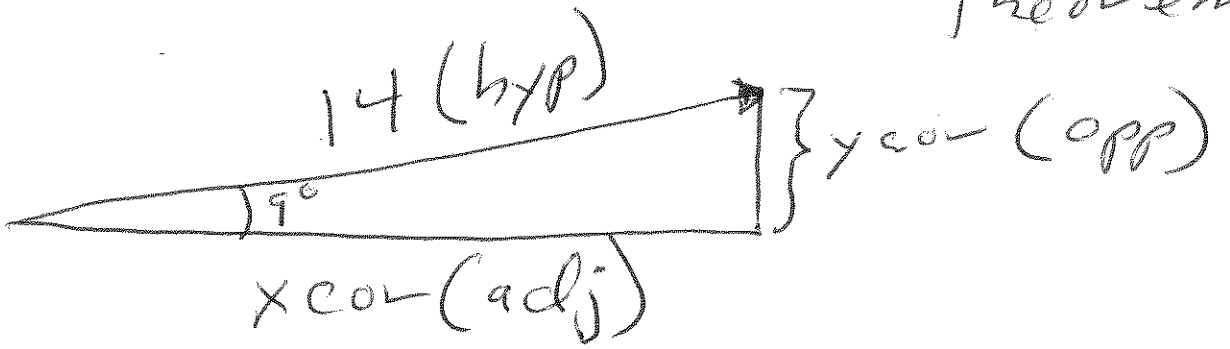
$$0.1564 = \frac{y\text{cor}}{14}$$

$$(0.1564)(14) = y\text{cor}$$

$$2.19 = y\text{cor}$$



4. TANGENT and Pythagorean Theorem



TOA $\quad \text{Tangent}(9^\circ) = \frac{\text{opp}}{\text{adj}} = \frac{y\text{cor}}{x\text{cor}}$

$$\text{Tan}(9^\circ) = \frac{y\text{cor}}{x\text{cor}}$$

$$0.1584 = \frac{y\text{cor}}{x\text{cor}}$$

$$(0.1584)(x\text{cor}) = y\text{cor} \qquad \boxed{y\text{cor}} = \boxed{0.1584\, x\text{cor}}$$

By Pythagorean theorem

$$x\text{cor}^2 + \boxed{y\text{cor}}^2 = 14^2$$

$$\boxed{y\text{cor}} = \boxed{0.1584\, x\text{cor}}$$

$$x\text{cor}^2 + \boxed{0.1584\, x\text{cor}}^2 = 14^2$$

$$1 x_{cor}^2 + 0.0251 x_{cor}^2 = 196$$

$$1.0251 x_{cor}^2 = 196$$

$$x_{cor}^2 = \frac{196}{1.0251} = 191.2$$

$$\sqrt{x_{cor}^2} = \sqrt{191.2}$$

$$x_{cor} = \boxed{13.828}$$

$$x_{cor}^2 + y_{cor}^2 = 14^2$$

$$191.2 + y_{cor}^2 = 196$$

$$y_{cor}^2 = 196 - 191.2$$

$$= 4.8$$

$$\sqrt{y_{cor}^2} = \sqrt{4.8}$$

$$y_{cor} = \boxed{2.19}$$

OR use fact that $y_{cor} = 0.1584 x_{cor}$

$y_{cor} = (0.1584)(13.828) = \boxed{2.19}$

y_{cor} ← we need y_{cor} ; x_{cor} ← we have x_{cor}